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09/776,794	02/04/2001	Huy Thatminh Ton	84813	1595

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EXAMINER

TANG, KENNETH

ART UNIT PAPER NUMBER

2195

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/776,794

Applicant(s)

TON ET AL.

Examiner

Kenneth Tang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-16 and 25-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-16 and 25-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the Amendment filed on 11/26/04. Applicant's arguments have been fully considered but are not found to be persuasive.
2. Claims 1-10, 12-16, and 25-33 are presented for examination.

Claim Objections

3. Claim 33 is objected to because of the following informalities: "correspond" in line 2 should be changed to "corresponds". Appropriate correction to the grammatical error is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-10 are directed to method steps which can be practiced mentally in conjunction with pen and paper, therefore they are directed to non-statutory subject matter. Specifically, as claimed, it is uncertain what performs each of the claimed method steps because it is not tangible. The examiner suggests applicant to change "method" to "computer implemented methods" in the preamble to overcome the outstanding 35 U.S.C. 101 rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-10, 12-16, and 25-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The following claim languages are indefinite:

- i. In claim 1, “indicating for each of a plurality of resources an allocated semaphore” is indefinite because it is not made explicitly clear in the claim language what the indication consists of. For example, it is unclear whether this entails whether there exists an allocated semaphore in the resource or if the resource is available (or not) to be allocated, etc. A structural relationship was not established between the “indication of the first semaphore” (line 8) and the “resources is available” (line 7).
- ii. In claim 1, there is no relationship or link between “shared resources” (in the preamble) to the first resource or anything else in the body of the claim.
- iii. Claims 25 and 30 are rejected for the same reasons as stated in the rejection of claim 1 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-10, 12-16, and 25-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perks (US 6,532,487 B1) in view of George et al. (hereinafter George) (US 4,965,718).

7. As to claim 1, Perks teaches a method for dynamic allocation and management of semaphores for accessing shared resources, the method comprising:

maintaining a data structure indicating for each of a plurality of resources an allocated semaphore (*col. 2, lines 54-56, col. 4, lines 35-36, col. 6, lines 4-6*);

receiving a request to access a first resource from a first task (*col. 4, lines 57-60*);

8. Perks teaches allocating a semaphore in response to determining when the resource is available and updating (modifying) the data structure with indications of the first resource but fails to explicitly teach signaling to the first task that the first resource is available. However, George teaches notifying (signaling) the requesting processing element via the interconnections means if the resource is available (*see Abstract and col. 2, lines 58-68*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of signaling the first task as being available in order to increase the efficiency of the system by providing synchronization of the processes (*col. 1, lines 41-50*).

9. As to claim 2, George teaches wherein said determining that the first resource is available includes checking the data structure for an indication of the first resource (*see Abstract and col. 2, lines 58-68*).

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10. As to claim 3, Perks teaches wherein maintaining a current access type for each of the plurality of resources (*col. 1, lines 25-34*).

11. As to claim 4, George teaches wherein said determining that the first resource is available includes finding an indication of the first resource and an associated current access type of read in the data structure, and recognizing that the request corresponds to a read request (*see Abstract and col. 2, lines 58-68*).

12. As to claim 5, George teaches receiving a second request to access the first resource from a second task; referencing the data structure to determine that the first resource is currently not available, and signaling to the second task that the first resource is not available (*see Abstract and col. 2, lines 58-68, col. 3, lines 1-9*).

13. As to claim 6, George teaches comprising receiving a second request to access the first resource from a second task; referencing the data structure to determine that the first resource is currently read-locked, recognizing that the second request corresponds to a read access request; and signaling to the second task that the first resource is available (*see Abstract and col. 2, lines 58-68, col. 3, lines 1-9*).

14. As to claim 7, George teaches receiving a second request to access the first resource from a second task; referencing the data structure to determine that the first resource is currently read-locked, recognizing that the second request corresponds to a write access request; and

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signaling to the second task that the first resource is not available (*see Abstract and col. 2, lines 58-68, col. 3, lines 1-9*).

15. As to claim 8, George teaches receiving a second request to access the first resource from a second task; referencing the data structure to determine that the data structure to determine that the first resource is currently write-locked, and signaling to the second task that the first resource is not available (*see Abstract and col. 2, lines 58-68, col. 3, lines 1-9*).

16. As to claim 9, Perks teaches receiving a second request to access the first resource from a second task, the second request, including a request timeout value (*col. 4, lines 57-60*); George teaches referencing the data structure to determine that the first resource is currently not available, queuing the second request, the first task releasing the first resource within a timeframe corresponding to the timeout value, and signaling to the second task that the first resource is available (*see Abstract and col. 2, lines 58-68, col. 3, lines 1-9, and claim 2*).

17. As to claim 10, Perks teaches receiving a second request to access the first resource from a second task, the second request, including a request timeout value (*col. 4, lines 57-60*); referencing the data structure to determine that the first resource is currently not available, queuing the second request, expiring the second request based on the timeout value, and signaling to the second task that the first resource is not available (*col. 63, lines 64-68, col. 64, lines 1-8 and 64-68, and col. 65, lines 1-8*).

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18. As to claim 12, Perks teaches a computer-readable medium containing computer-executable instructions for performing steps for dynamic allocation and management of semaphores for accessing shared resources, said steps comprising:

maintaining a data structure indicating for each of a plurality of resources all allocated semaphore (*col. 2, lines 54-56, col. 4, lines 35-36, col. 6, lines 4-6*);

receiving a first request to access a resource (*col. 4, lines 57-60*);

Perks teaches allocating a semaphore when the resource is available and updating (modifying) the data structure with the first resource and an indication (flag variable) of a first semaphore (*col. 1, lines 20-34*), but fails to explicitly teach receiving a second request to access the resource and after determining whether or not that first resource is available, allocating a second resource, and updating the data structure with the second semaphore. However, George teaches checking to see if a resource is available and updating of a data structure in the resource and done with signals used to communicate event occurrences (*claim 1, col. 2, lines 58-68, col. 3, lines 1-9, col. 5, lines 10-36, Abstract*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature receiving a second request to access the resource and after determining whether or not that first resource is available, allocating a second resource, and updating the data structure with the second semaphore to the existing system of Perks in order for the process to keep going and continue for the next request (periodic re-readings) (*claim 1, col. 2, lines 58-68, col. 3, lines 1-9, col. 5, lines 10-36, Abstract*).

19. As to claim 13, George teaches updating, after receiving a release request for the resource, the data structure to remove the indication of the first semaphore and to indicate that

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the resource is allocated with the second semaphore (*claim 1, col. 2, lines 58-68, col. 3, lines 1-9, col. 5, lines 10-36, Abstract*).

20. As to claim 14, it is rejected for the same reasons as stated in the rejection of claim 6.

21. As to claim 15, it is rejected for the same reasons as stated in the rejection of claim 8.

22. As to claim 16, it is rejected for the same obvious reasons as stated in the rejection of claim 12 (reasons for a third request the same as reasons for the second request).

23. As to claims 25-29, they are rejected for the same reasons as stated in the rejections of claims 1-5 and 12.

24. As to claim 30, it is rejected for the same reason as stated in the rejection of claim 25. In addition, Perks teaches a computer system structure (see title) for the dynamic allocation and management of semaphores for accessing shared resources.

25. As to claim 31, George teaches mean for updating (alteration of semaphore data and indicate a status), after receiving a release request for the resource, the data structure to remove the indication of the first semaphore and to indicate that the resource is allocated with the second semaphore (*col. 5, lines 37-64*).

26. As to claim 32, George teaches wherein the first (reading) and second (repeating the reading) requests correspond to read access requests to the resource (*col. 5, lines 37-64, for example*).

27. As to claim 33, George teaches wherein the first request corresponds to a read (reading) access and the second request corresponds to a write (storing the directive) access request to the resource (*col. 5, lines 37-64, for example*).

Response to Arguments

28. During patent examination, the pending claims must be “given their broadest reasonable interpretation consistent with the specification.” *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969).

29. *Applicant argues on page 9 of the Remarks that the application is not directed to an abstract idea, law of nature, or natural phenomenon, but rather to that useful in the technological or useful arts, and argues that the 35 USC § 101 rejection be withdrawn. Applicant requests citation of the MPEP to support this rejection.*

In response, the application is directed to an abstract idea or mental step for it is not tangible. Therefore, the claim is non-statutory and the rejection is proper (MPEP 2106). The

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rejection can easily be overcome by amending the method to be a computer-implemented method.

30. *Applicant argues on page 9 of the Remarks that the Office action only provides an indication of the rejections for claims 1, 11, 12, 17, 18, and 21 but doesn't give a reason.*

In response, the Examiner respectfully disagrees. The reasoning can be found after the term "because". For example, in claim 1, "indicating for each of a plurality of resources an allocated semaphore" is indefinite because it is not made explicitly clear in the claim language what the indication consists of. For example, it is unclear whether this entails whether there exists an allocated semaphore in the resource or if the resource is available (or not) to be allocated, etc. A structural relationship was not established between the "indication of the first semaphore" (line 8) and the "resources is available" (line 7).

31. *Applicant argues on page 10 that the breadth of the claim is not indefiniteness.*

In response, the Examiner does not disagree with that. However, a structural relationship was not established between the "indication of the first semaphore" (line 8) and the "resources is available" (line 7). The Applicant has not responded to that rejection.

32. *Applicant argues on page 12 of the Remarks that the limitation of claim 1 is not taught in Perks in view of George because it doesn't teach being "after" or "in response to" determining that the first resource is available". And on page 13, Applicant argues that Perks does not teach that these assignments are dynamic in the manner recited in the claims.*

In response, the Examiner respectfully disagrees. Perks teaches dynamically managing semaphores using a dynamic link library. By definition (from Silberchatz's OPERATING

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SYSTEM CONCEPTS, page 242), dynamic loading or dynamic linking entails checking to see if the resource is available (whether needed routine is not already in memory), and in response to it being available, allocating.

33. *Applicant argues on pages 13-14 of the Remarks regarding the motivation and rational for the combination because neither of the teachings provides a motivation for selecting parts of Perks and parts of George and then to make a combined system. The Office action stated that semaphores can be used to synchronize processes, however, this fails to teach what parts from each reference to extract and the manner in which to combine. Also, what process of Perks is the Office trying to synchronize?*

Perks teaches allocating a semaphore when the resource is available and updating (modifying) the data structure with the first resource but fails to explicitly teach signaling to the first task that the first request is available. However, George teaches notifying (signaling) the requesting processing element via the interconnections means if the resource is available (*see Abstract and col. 2, lines 58-68*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature of signaling the first task as being available to the existing semaphore and resource management system of Perks in order to increase the efficiency of the system by providing synchronization of the processes (*col. 1, lines 41-50*). Both Perks and George teach resource allocation and semaphore management in a multi-taking computer system, and are in the same field of endeavor. George teaches having signals to notify so that other processes (plurality or parallel processing) can also occur. The signal notifications allows for the synchronization of the multi-tasking processes. Perks also teaches multi-tasking and George's synchronization of the multi-taking process would apply to the multi-tasking of Perks.

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34. *Applicant argues on page 14 of the Remarks that the Office presents in its rejection a different data structure in claim 1 (that of Perks) and in claim 2 (and that of George) but the claims require the same data structure.*

In response, the Examiner respectfully disagrees. Perks and George both teach the same type of data structure. Perks and George are just different references that were combined/modified. The (indication of) availability taught in George was combined with the data structure that was updated or modified in Perks (see rejection of claim 1).

35. *Applicant argues on page 14 of the Remarks that Perks does not make a distinction of between the types of access to the shared data protected by a semaphore.*

In response to applicant's arguments, the recitation "semaphores for accessing shared resources" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). The shared resources are in the preamble and no relationship or connection is made with anything else in the body of the claim. Even so, Perks teaches accessing shared resources (*col. 1, lines 15-34*).

36. *Applicant argues on page 14 of the Remarks that George fails to teach current access types or a read access type.*

In response, the Examiner respectfully disagrees. George teaches having and monitoring the status of a resource (*col. 2, lines 58-68 through col. 3, lines 1-9, for example*).

37. *Applicant argues on pages 14-15 of the Remarks that George fails to teach referencing the data structure to identify the resource currently read-locked and recognizing that the second request corresponds to a read and write access request.*

In response, the Examiner respectfully disagrees. George teaches having lock outs for reads and writes based on the status of resource (*col. 2, lines 58-68 through col. 3, lines 1-9, for example*).

38. *Applicant argues that the time-out in Perks does not teach or suggest a time-out value.*

In response, the Examiner respectfully disagrees. By definition, timeouts have a timeout value (time period) (*see Silberschatz et al. 's OPERATING SYSTEM CONCEPTS, page 115, last paragraph*).

39. *Applicant argues that neither Perks nor George teach or suggest signaling to the second task that the first resource is not available.*

In response, the Examiner respectfully disagrees. For example, George teaches signaling to the second task that the first resource is unavailable (*col. 2, lines 58-68 through col. 3, lines 1-9, for example*).

40. *Applicant argues on page 16 of the Remarks that the limitation of claim 1 is not taught in Perks in view of George because it doesn't teach being "after" or "in response to" determining that the first resource is available".*

This is the same argument made on page 12 of the Remarks. Applicant is directed to the response found above to the argument.

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41. *On page 16 of the Remarks, Applicant demands for evidence as to from where the teaching of "in order for the process to keep going and continue for the next request" came from and why it should be combined.*

Perks teaches allocating a semaphore when the resource is available and updating (modifying) the data structure with the first resource and an indication (flag variable) of a first semaphore (*col. 1, lines 20-34*), but fails to explicitly teach receiving a second request to access the resource and after determining whether or not that first resource is available, allocating a second resource, and updating the data structure with the second semaphore. However, George teaches checking to see if a resource is available and updating of a data structure in the resource and done with signals used to communicate event occurrences (*claim 1, col. 2, lines 58-68, col. 3, lines 1-9, col. 5, lines 10-36, Abstract*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the feature receiving a second request to access the resource and after determining whether or not that first resource is available, allocating a second resource, and updating the data structure with the second semaphore to the existing resource allocation system of Perks in order for the process to keep going and continue for the next request (periodic re-readings) (*claim 1, col. 2, lines 58-68, col. 3, lines 1-9, col. 5, lines 10-36, Abstract*). The reasoning of to keep going and continue for the next request came from George (*claim 1, col. 2, lines 58-68, col. 3, lines 1-25, col. 5, lines 10-36, Abstract*). Within the cited portion, there are periodic re-readings and repeated waits and reads allows for continuing of processing so that there aren't any inefficient or unacceptable delays.

42. *Applicant argues on page 16 of the Remarks that the references do not teach the third access corresponding to a read access request.*

In response, the Examiner respectfully disagrees. Perks teaches a plurality of accesses and the definition of a plurality is two or more, which encompasses a third access (*col. 1, lines 25-35*).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Tang whose telephone number is (571) 272-3772. The examiner can normally be reached on 8:30AM - 6:00PM, Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kt
4/28/05


LEWIS A. BULLOCK, JR.
PRIMARY EXAMINER